

## PATENT COOPERATION TREATY

PCT

## NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

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in its capacity as elected Office

Date of mailing (day/month/year) 16 December 1998 (16.12.98)	
International application No. PCT/GB98/01211	Applicant's or agent's file reference P/10013WO
International filing date (day/month/year) 24 April 1998 (24.04.98)	Priority date (day/month/year) 25 April 1997 (25.04.97)
Applicant SHAH, Mumtaz	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

25 November 1998 (25.11.98)

☐ in a notice effecting later election filed with the International Bureau on:2. The election ☒ was☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Maria Kirchner
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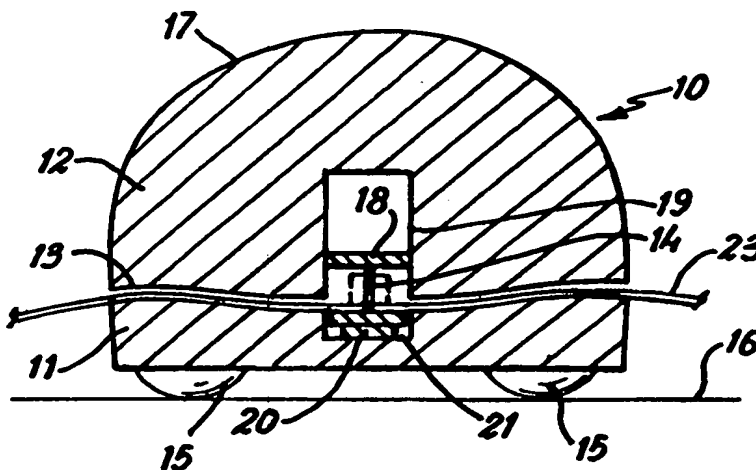
**PCT**WORLD INTELLECTUAL PROPERTY ORGANIZATION  
International Bureau

## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification 6 :</b> <b>B26B 3/08</b>	<b>A1</b>	<b>(11) International Publication Number:</b> <b>WO 98/48981</b> <b>(43) International Publication Date:</b> 5 November 1998 (05.11.98)
<b>(21) International Application Number:</b> PCT/GB98/01211 <b>(22) International Filing Date:</b> 24 April 1998 (24.04.98) <b>(30) Priority Data:</b> 9708327.3 25 April 1997 (25.04.97) GB <b>(71)(72) Applicant and Inventor:</b> SHAH, Mumtaz [GB/GB]; 96 Newport Road, Chorlton-cum-Hardy, Manchester M21 1WN (GB). <b>(74) Agents:</b> GOODWIN, Mark et al.; Wilson Gunn M'Caw, 41-51 Royal Exchange, Cross Street, Manchester M2 7BD (GB).		<b>(81) Designated States:</b> AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>With international search report.</i>

**(54) Title:** CUTTING SHEET MATERIAL**(57) Abstract**

Apparatus for cutting sheet material comprises a hand-manoeuvrable body (10) comprising separate superimposed parts (11, 12) with a gap (13) between in which a sheet material (23) can be received. The parts are physically connected only by a blade (14), and a pressure means (22), e.g. a freely rotatable wheel is provided to tension the sheet in front of the blade. The gap (13) may be sinusoidal for support, and tensioning of the sheet. A window (24) is provided for viewing the sheet in front of the blade (14).



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**CUTTING SHEET MATERIAL**

This invention relates to apparatus for cutting sheet material.

For cutting sheet material such as paper or cloth plastics, including PVC etc., it is known to use cutting apparatus as an alternative to shears, scissors or a guillotine, which generally comprise a blade mounted to be slidable along some form of linear guide to produce a straight line cut, for example along a measured line for cutting paper or cloth to a required length. An example of such a cutter is the applicant's own British Patent, GB-A-2223976, wherein a blade runs along guides in an arm which is shaped to place the sheet under tension to enable a clean cut to be made by the blade.

Such cutters are useful for cutting sheets to predetermined sizes, for example for office use, or for cutting wallpaper to a required length. The blade is however constrained to move only along the guide, and thus cannot be used for cutting other than straight lines, or for example cutting out paper shapes, or cloth to a pattern, and heretofore scissors or shears have to be used for such purposes.

An object of the invention is to provide apparatus for cutting sheet material which can be used to cut along other than straight line, and which preferably can be used freely, without restriction over the area of a sheet of material.

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According to the invention, apparatus for cutting sheet material comprises a lower part for placing below a piece of sheet material, an upper part disposed above said lower part, with a gap between said upper and lower parts to receive said piece of sheet material, and a cutting blade  
5 secured in said upper and lower parts and extending across said gap.

The cutting blade or a holder and blade combination may be the only mechanical connection between the upper and lower parts, so that there is no obstruction to free movement of the apparatus when engaged with a sheet.

10 Resilient pressure exerting means may be provided mounted on one of the parts in the gap to bear on the other part, so that said piece of sheet material can be inserted between said resilient pressure exerting means and said other part to tension the sheet material in the vicinity of the blade, to thus assist a clean cutting action. Such pressure exerting means may also  
15 help to distribute a user's hand pressure on the upper part to the lower part without stress on the blade.

The underside of the lower part may be provided with runners or slides or optionally, rotatable members, to enable the lower part to be moved over a supporting surface such as a cutting table. The runners or  
20 slides may comprise inverted domes having a smooth finish, or rotatable members such as wheels or rollers mounted on the lower part, or recessed

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ball-bearings in sockets or races may be formed in the underside of the lower part.

The upper part may be shaped and configured to provide a handle suitable for manipulation of the apparatus, and to guide and move the apparatus as required.

An embodiment of apparatus according to the invention for cutting sheet material will now be described by way of example, with reference to the accompanying drawings, wherein:-

Fig. 1 is a transverse sectional view of the apparatus;

Fig. 2 is a longitudinal sectional view of the apparatus; and

Fig. 3 is a side view of the apparatus.

Apparatus according to the invention for cutting sheet material, as shown in the drawings, comprises an assembly 10, comprising a lower part 11, and an upper part 12. The upper and lower parts are assembled so that a gap 13 is present between them, and the only mechanical connection between the parts is a cutting blade 14 and its holder, which prevents the parts from being separated.

The lower part 11 is provided at its front and rear ends with respective groups of runners 15, in the form of inverted domes. These are

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preferably of a self lubricating plastics material such as PTFE, or of metal. These runners 15 enable the lower part 11 to be moved freely about a surface 16 such as a table.

The upper part 12 is shaped to provide a hand grip surface 17. Blade 14 is held at its upper end in a holder 18 secured in a recess 19 in the upper part 12. The lower end of blade 14 is held in a further holder 20 secured in a recess 21 in the lower part 11. The blade 14 can be removed and replaced in the holders, for example to replace broken or blunted blades.

A freely rotatable pressure wheel 22 is carried by the holder 18. This tensions sheet material such as 23 immediately in front of blade 14.

Sheet 23 is of material such as paper and is inserted into the gap 13 until the edge of the sheet abuts the cutting edge of blade 14, and wheel 22 presses on the sheet, pressing it against the upper surface of lower part 11, and subjecting the sheet 23 to tension in the zone of the blade 14. This enables a clean cut to be made by the blade as the apparatus is moved over the support 16.

The gap 13 is contoured as shown in the drawings to provide ridges on the lower part 11 and corresponding recesses in the upper part 12. This produces a sinusoidal-like path for the sheet 23 across the blade, and helps to tension the sheet and provide for support of the upper part by the lower

part.

The weight exerted by the user's hand is passed on to the lower part 11 to each side of the blade rather than through the blade 14, since otherwise the strain on the blade would lead to frequent breakages.

5 As there is no obstruction to the sheet 23 other than the blade and its holder in the gap 13, the apparatus can be moved freely over the support surface 16, cutting along any measured lengths and along straight ruled lines, for example in cutting wrapping paper to length, but also to follow curves etc. as in cutting out paper patterns, or cutting cloth to a pattern for  
10 dressmaking; or in a non-straight edge feature such as a moulding.

A magnifying window 24 is provided in the upper part, with a space 25 in the upper part allowing visual inspection of the sheet 23 immediately in front of the blade 14.

The above is one example of a possible form of apparatus according  
15 to the invention, and many of the details may be varied within the scope of the invention. For example, instead of a wheel 14, rollers, dome head bearing members or recessed ball-bearings may be used to allow the lower part to move freely.

The number and placing of the pressure exerting members 22 may  
20 also be varied, most probably by providing a greater number, to transmit substantially all the hand pressure load to the lower part without stressing



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the blade.

Further, the shape and configuration of the upper part may be varied to provide a suitable or comfortable hand hold in different styles and sizes for single or double-handed operation, for various sizes of hands, or a joy-

5 stick style handle used.

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**CLAIMS**

1. Apparatus for cutting sheet material, comprising a lower part for placing below a piece of sheet material, an upper part disposed above said lower part, a gap between said upper and lower parts to receive said piece  
5 of sheet material, and a cutting blade secured in said upper and lower parts and extending across said gap.

2. Apparatus according to claim 1 wherein said cutting blade or a holder and blade combination is the only mechanical connection between said upper and said lower parts, whereby there is no obstruction to free  
10 movement of the apparatus when engaged with a sheet.

3. Apparatus according to claim 1 or 2 wherein pressure exerting means are provided on one of the parts in the gap to bear on the other part, so that said piece of sheet material can be inserted between the pressure exerting means and the other part to tension the sheet material in the vicinity of the  
15 blade.

4. Apparatus according to claim 3 wherein said pressure exerting means comprises a freely rotatable wheel, positioned immediately in front of the blade.

5. Apparatus according to any preceding claim, wherein the upper face  
20 of said lower part and the lower face of said upper part are shaped to provide matching sinusoidal surfaces for support of the upper part and

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tensioning of the sheet.

6. Apparatus according to any preceding claim, wherein a window is provided in one part for viewing the sheet immediately in front of the blade.

# PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>IM/LD/P/10013WO</b>	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. <b>PCT/GB98/01211</b>	International filing date (day/month/year) <b>24/04/1998</b>	Priority date (day/month/year) <b>25/04/1997</b>
International Patent Classification (IPC) or national classification and IPC <b>B26B3/08</b>		
Applicant <b>SHAH, Mumtaz</b>		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 5 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 8 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☒ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand  <b>25/11/1998</b>	Date of completion of this report  <b>28. 07. 99</b>
Name and mailing address of the international preliminary examining authority:   <b>European Patent Office</b> <b>D-80298 Munich</b> <b>Tel. (+49-89) 2399-0 Tx: 523656 epmu d</b> <b>Fax: (+49-89) 2399-4465</b>	Authorized officer  <b>Westhues, T</b>  Telephone No. (+49-89) 2399 7435 

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/GB98/01211

**I. Basis of the report**

1. This report has been drawn on the basis of *(substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.)*:

**Description, pages:**

1-6	as received on	14/06/1999	with letter of	11/06/1999
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**Claims, No.:**

1-5	as received on	14/06/1999	with letter of	11/06/1999
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**Drawings, sheets:**

1/1	as originally filed
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2. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/GB98/01211

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes:	Claims	1-5
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-5
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-5
	No:	Claims	

**2. Citations and explanations**

**see separate sheet**

**VI. Certain documents cited**

**1. Certain published documents (Rule 70.10)**

and / or

**2. Non-written disclosures (Rule 70.9)**

**see separate sheet**

**VIII. Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

**see separate sheet**

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/GB98/01211

**Re Item V**

**Reasoned statement under Article 35(2) PCT with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

The following documents (D) are referred to in this communication; the numbering following the order of appearance in the search report will be adhered to in the rest of the procedure:

D1: US-A-3 835 536 (MARCOUX E) 17 September 1974

Document D1, which is considered to represent the most relevant state of the art, discloses (cf. especially figures 8-11) an apparatus for cutting sheet material according to the preamble of claim 1 from which the subject-matter of claim 1 differs in that

pressure exerting means (22) are provided on one of the parts (11 or 12) in the gap (13) to bear on the other part (12 or 11), so that the piece of sheet material (23) can be inserted between the pressure exerting means (22) and the other part to tension the sheet material in the vicinity of the blade.

The subject-matter of claim 1 is therefore novel (Article 33(2) PCT).

The problem to be solved by the present invention may therefore be regarded as providing a means of assisting a clean cutting action.

The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) because it is neither known from, nor rendered obvious by, the available prior art (apart from the document cited below in VI.).

The apparatus according to claim 1 allows for guidance free cutting of any shape of sheet material such as curved cuts with the danger of bulging in front of the cutter minimised thus enhancing the clean cut.

Claims 2-5 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

All claims are considered industrially applicable.

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/GB98/01211

**Re Item VI**

**Certain documents cited**

Certain published documents (Rule 70.10)

Application No Patent No	Publication date (day/month/year)	Filing date (day/month/year)	Priority date (valid claim) (day/month/year)
DE-A-196 54 034	31/07/97	23/12/96	-

Under the assumption that the claimed priority of the application is valid, the above document has not been considered for examination. It may, however, be of relevance in any subsequent regional phase.

**Re Item VIII**

**Certain observations on the international application**

As it is not readily understandable to the public what the "amended claims" are referring to in the description on page 6, line 3, the statement results in lack of clarity (Article 6 PCT).



Druckexemplar

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**CUTTING SHEET MATERIAL**

This invention relates to apparatus for cutting sheet material.

For cutting sheet material such as paper or cloth plastics, including PVC etc., it is known to use cutting apparatus as an alternative to shears, scissors or a guillotine, which generally comprise a blade mounted to be slidable along some form of linear guide to produce a straight line cut, for example along a measured line for cutting paper or cloth to a required length. An example of such a cutter is the applicant's own British Patent, GB-A-2223976, wherein a blade runs along guides in an arm which is shaped to place the sheet under tension to enable a clean cut to be made by the blade.

Such cutters are useful for cutting sheets to predetermined sizes, for example for office use, or for cutting wallpaper to a required length. The blade is however constrained to move only along the guide, and thus cannot be used for cutting other than straight lines, or for example cutting out paper shapes, or cloth to a pattern, and heretofore scissors or shears have to be used for such purposes.

U.S. Patent No. 3,835,536 (Marcoux) discloses a cutter for sheet material comprising a member which is intended to be guided by a straight edge such as a rule, and comprises a lower part and an upper part with a slot between them for guiding an e.g. paper sheet. The two parts are

AMENDED SHEET

mechanically connected only by a cutter in the form of a razor blade, or a two-edged craft knife blade, and provide mating shaped surfaces for tensioning and guidance of the sheet.

5 An object of the invention is to provide apparatus for cutting sheet material which can be used to cut along other than straight line, and which preferably can be used freely, without restriction over the area of a sheet of material.

10 According to the invention, apparatus for cutting sheet material comprises a lower part for placing below a piece of sheet material, an upper part disposed above said lower part, with a gap between said upper and lower parts to receive said piece of sheet material, and a cutting blade secured in said upper and lower parts and extending across said gap and is characterised in that resilient pressure exerting means are provided mounted on one of the parts in the gap to bear on the other part, so that said piece  
15 of sheet material can be inserted between said pressure exerting means and said other part to tension the sheet material in the vicinity of the blade, to thus assist a clean cutting action.

20 The cutting blade or a holder and blade combination may be the only mechanical connection between the upper and lower parts, so that there is no obstruction to free movement of the apparatus when engaged with a sheet.

The pressure exerting means may also help to distribute a user's hand pressure on the upper part to the lower part without stress on the blade.

5 The underside of the lower part may be provided with runners or slides or optionally, rotatable members, to enable the lower part to be moved over a supporting surface such as a cutting table. The runners or slides may comprise inverted domes having a smooth finish, or rotatable members such as wheels or rollers mounted on the lower part, or recessed ball-bearings in sockets or races may be formed in the underside of the  
10 lower part.

The upper part may be shaped and configured to provide a handle suitable for manipulation of the apparatus, and to guide and move the apparatus as required.

15 An embodiment of apparatus according to the invention for cutting sheet material will now be described by way of example, with reference to the accompanying drawings, wherein:-

**Fig. 1** is a transverse sectional view of the apparatus;

**Fig. 2** is a longitudinal sectional view of the apparatus; and  
20

**Fig. 3** is a side view of the apparatus.

Apparatus according to the invention for cutting sheet material, as shown in the drawings, comprises an assembly 10, comprising a lower part 11, and an upper part 12. The upper and lower parts are assembled so that a gap 13 is present between them, and the only mechanical connection  
5 between the parts is a cutting blade 14 and its holder, which prevents the parts from being separated.

The lower part 11 is provided at its front and rear ends with respective groups of runners 15, in the form of inverted domes. These are preferably of a self lubricating plastics material such as PTFE, or of metal.  
10 These runners 15 enable the lower part 11 to be moved freely about a surface 16 such as a table.

The upper part 12 is shaped to provide a hand grip surface 17. Blade 14 is held at its upper end in a holder 18 secured in a recess 19 in the upper part 12. The lower end of blade 14 is held in a further holder 20  
15 secured in a recess 21 in the lower part 11. The blade 14 can be removed and replaced in the holders, for example to replace broken or blunted blades.

A freely rotatable pressure wheel 22 is carried by the holder 18. This tensions sheet material such as 23 immediately in front of blade 14.

20 Sheet 23 is of material such as paper and is inserted into the gap 13 until the edge of the sheet abuts the cutting edge of blade 14, and wheel

2 presses on the sheet, pressing it against the upper surface of lower part 11, and subjecting the sheet 23 to tension in the zone of the blade 14. This enables a clean cut to be made by the blade as the apparatus is moved over the support 16.

5           The gap 13 is contoured as shown in the drawings to provide ridges on the lower part 11 and corresponding recesses in the upper part 12. This produces a sinusoidal-like path for the sheet 23 across the blade, and helps to tension the sheet and provide for support of the upper part by the lower part.

10           The weight exerted by the user's hand is passed on to the lower part 11 to each side of the blade rather than through the blade 14, since otherwise the strain on the blade would lead to frequent breakages.

          As there is no obstruction to the sheet 23 other than the blade and its holder in the gap 13, the apparatus can be moved freely over the support  
15       surface 16, cutting along any measured lengths and along straight ruled lines, for example in cutting wrapping paper to length, but also to follow curves etc. as in cutting out paper patterns, or cutting cloth to a pattern for dressmaking; or in a non-straight edge feature such as a moulding.

          A magnifying window 24 is provided in the upper part, with a space  
20       25 in the upper part allowing visual inspection of the sheet 23 immediately in front of the blade 14.

The above is one example of a possible form of apparatus according to the invention, and many of the details may be varied within the scope of the invention as defined in the amended claims. For example, instead of a wheel 14, rollers, dome head bearing members or recessed ball-bearings  
5 may be used to allow the lower part to move freely.

The number and placing of the pressure exerting members 22 may also be varied, most probably by providing a greater number, to transmit substantially all the hand pressure load to the lower part without stressing the blade.

10 Further, the shape and configuration of the upper part may be varied to provide a suitable or comfortable hand hold in different styles and sizes for single or double-handed operation, for various sizes of hands, or a joystick style handle used.

**CLAIMS**

1. Apparatus for cutting sheet material, comprising a lower part (11) for placing below a piece of sheet material (23), an upper part (12) disposed above said lower part, a gap (13) between said upper and lower parts to receive said piece of sheet material, and a cutting blade (14) secured in said upper and lower parts and extending across said gap characterised in that pressure exerting means (22) are provided on one of the parts (11 or 12) in the gap (13) to bear on the other part (12 or 11), so that said piece of sheet material (23) can be inserted between the pressure exerting means (22) and the other part to tension the sheet material in the vicinity of the blade (14).

2. Apparatus according to claim 1 characterised in that said cutting blade (14) or a holder and blade combination (18, 14) is the only mechanical connection between said upper and said lower parts, whereby there is no obstruction to free movement of the apparatus when engaged with a sheet.

3. Apparatus according to claim 3 characterised in that said pressure exerting means comprises a freely rotatable wheel (22), positioned immediately in front of the blade (14).

4. Apparatus according to any preceding claim characterised in that the upper face of said lower part (11) and the lower face of said upper part (12) are shaped to provide matching sinusoidal surfaces for support of the upper part and tensioning of the sheet.

5. Apparatus according to any preceding claim, wherein a window (24) is provided in one part for viewing the sheet immediately in front of the blade (14).



## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>P/10013WO</b>	<b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. <b>PCT/GB 98/ 01211</b>	International filing date (day/month/year) <b>24/04/1998</b>	(Earliest) Priority Date (day/month/year) <b>25/04/1997</b>
Applicant  <b>SHAH, Mumtaz</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 2 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. ☐ Certain claims were found unsearchable (see Box I).

2. ☐ Unity of invention is lacking (see Box II).

3. ☐ The international application contains disclosure of a **nucleotide and/or amino acid sequence listing** and the international search was carried out on the basis of the sequence listing

☐ filed with the international application.

☐ furnished by the applicant separately from the international application.

☐ but not accompanied by a statement to the effect that it did not include matter going beyond the disclosure in the international application as filed.

☐ Transcribed by this Authority

4. With regard to the title, ☒ the text is approved as submitted by the applicant

☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

☒ the text is approved as submitted by the applicant

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this International Search Report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is:

Figure No. 1 ☐ as suggested by the applicant.

☐ None of the figures.

☒ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/GB 98/01211

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC 6 B26B3/08		
According to International Patent Classification(IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b> Minimum documentation searched (classification system followed by classification symbols) IPC 6 B26B		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used)		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3 835 536 A (MARCOUX E) 17 September 1974 see column 3, line 36 - column 4, line 6; figures 8-11 ---	1,2
X	US 5 282 316 A (ANDERSON DENNIS C) 1 February 1994 see the whole document ---	1
A	DE 458 795 C (HANKEL) 29 March 1928 see the whole document ---	1,3,4
P,X	DE 196 54 034 A (KOCH ANDREAS ; KOCH MARKUS (DE)) 31 July 1997 see the whole document -----	1
<div style="display: flex; justify-content: space-between;"> <span><input type="checkbox"/> Further documents are listed in the continuation of box C.</span> <span><input checked="" type="checkbox"/> Patent family members are listed in annex.</span> </div>		
* Special categories of cited documents :		
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </div> <div style="width: 45%;"> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"&amp;" document member of the same patent family</p> </div> </div>		
Date of the actual completion of the international search  <div style="text-align: center; font-weight: bold;">4 August 1998</div>		Date of mailing of the international search report  <div style="text-align: center; font-weight: bold;">13/08/1998</div>
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016		Authorized officer  <div style="text-align: center; font-weight: bold;">Herygers, J</div>

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 3835536	A	17-09-1974	NONE	
US 5282316	A	01-02-1994	NONE	
DE 458795	C		NONE	
DE 19654034	A	31-07-1997	NONE	